OCCUPATIONAL *Hazards*

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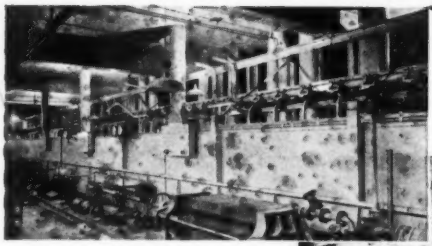
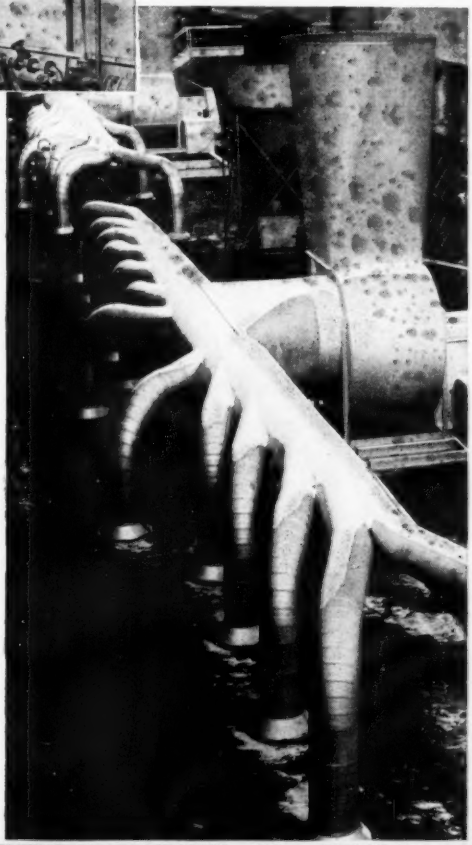
- Pacific Mills Merchandises Safety Successfully
- Occupational Skin Troubles—How to Prevent Them
- Controlling Health Hazards in Defense Projects
- Trend in Occupational Disease Legislation
- New Ideas in the Field

THE ONLY MANAGEMENT PUBLICATION DEVOTED TO THE ENGINEERING CONTROL OF:

Dusts • Fumes • Vapors • Gases • Organic Solvents • Dermatitis • Industrial Sanitation • Industrial Health & Safety



These views—the plant of a large manufacturer of electric refrigerators—show a KIRK & BLUM installation on a Stevens Automatic Cleaning and Pickling machine, and the suction piping connections and header, exhaust fans and discharge stacks above factory roof.



•For Defense of MEN and MACHINES

The fumes and vapors from metal parts cleaning, pickling and plating operations are injurious to both men and machines. KIRK & BLUM Fume Exhaust Systems are scientifically designed and engineered to remove these hazards quickly, efficiently, economically. In the accompanying illustration, note the one-piece long radius elbows, the streamlined fittings, and the 45° angle at which they enter the main line—exclusive features that make possible a greater amount of suction with lower power requirements. Every KIRK & BLUM System is installed under a written performance guarantee.

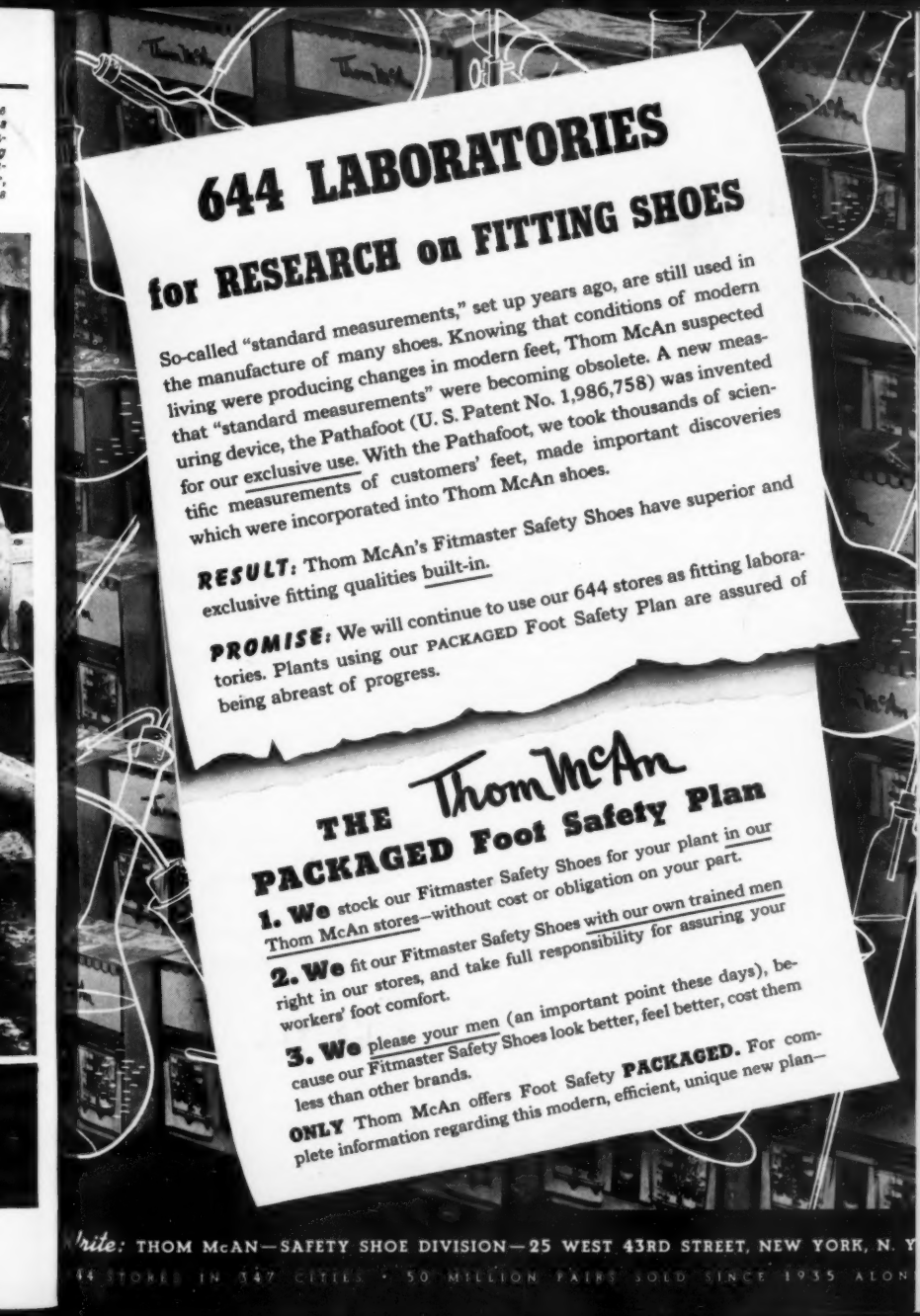
Details of KIRK & BLUM Engineering service and interesting illustrated books—mailed upon request. Write—No obligation.

The Kirk & Blum Mfg. Company

"Over a Third Century of Service to Industry"

2802 Spring Grove Ave.,
CINCINNATI OHIO

KIRK & BLUM
DUST CONTROL SYSTEMS


644 LABORATORIES
for RESEARCH on FITTING SHOES
So-called "standard measurements," set up years ago, are still used in the manufacture of many shoes. Knowing that conditions of modern living were producing changes in modern feet, Thom McAn suspected that "standard measurements" were becoming obsolete. A new measuring device, the Pathafoot (U. S. Patent No. 1,986,758) was invented for our exclusive use. With the Pathafoot, we took thousands of scientific measurements of customers' feet, made important discoveries which were incorporated into Thom McAn shoes.
RESULT: Thom McAn's Fitmaster Safety Shoes have superior and exclusive fitting qualities built-in.
PROMISE: We will continue to use our 644 stores as fitting laboratories. Plants using our PACKAGED Foot Safety Plan are assured of being abreast of progress.
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1. We stock our Fitmaster Safety Shoes for your plant in our Thom McAn stores—without cost or obligation on your part.
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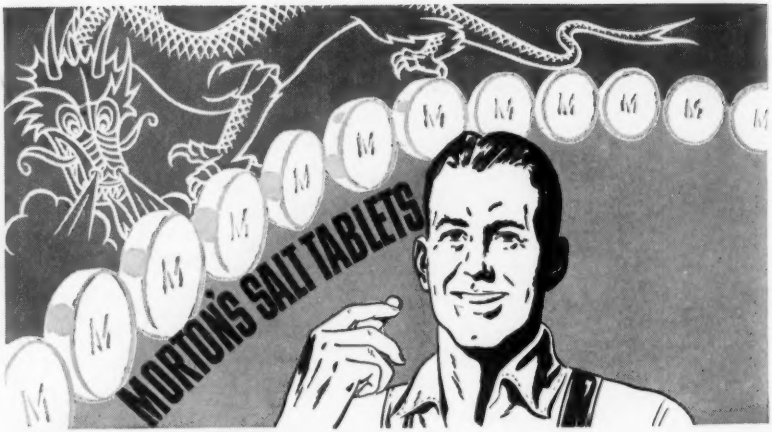
Write: THOM McAN—SAFETY SHOE DIVISION—25 WEST 43RD STREET, NEW YORK, N. Y
644 STORES IN 347 CITIES • 50 MILLION PAIRS SOLD SINCE 1935 ALON



Your Defense Against the Stealthy Invasion of HEAT-FAG

THE dangerous, insidious thing about salt loss is its silent, unseen undermining of efficiency. As workers sweat, salt is lost from their bodies. As the natural salt balance is disturbed, they tire, make mistakes, feel out of sorts. And, production suffers.

That's Heat-Fag. It has long taken a terrific, almost unsuspected toll of American industry . . . yet the remedy is simple and inexpensive. Morton's salt tablets, in convenient dispensers at all drinking fountains, make it easy for workers to replace the salt lost by sweating.

DISPENSERS
500 Tablet size - - **$3.25**
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TABLETS—Case of 9000
10 grain Salt Tablets, **$2.60**

Combination Salt-Dextrose Tablets, per case - - **$3.15**

AVOID HEAT-FAG
USE **MORTON'S SALT TABLETS**

Place Morton Dispensers At All Drinking Fountains

They deliver salt tablets, one at a time. No crushing or waste. Sanitary, Durable. Morton's salt tablets contain the most highly refined salt, pressed into tablet form. Dissolve in less than 40 seconds after swallowing.

Order dispenser and tablets from this ad, or from your distributor.

FREE... write on your firm letterhead for a pocket size sample tube of MORTON'S SALT TABLETS, and new folder, "Heat-Fag and Salt Tablets."

MORTON SALT COMPANY
CHICAGO, ILLINOIS

OUT DUE TO ILLNESS!

He's at his machine . . . but he really isn't there! He's ill . . . and lagging in production. He caught someone else's cold at that dangerous "contact spot"—the "common" drinking fountain. How many other men will he infect?

Protect your workers with Tulip Water Cups at less than one-fifth of a cent per cup. They give you man-hour insurance . . . keep workers on the job doing a *full day's work*. And, with Tulip Water Cups, your men find it more pleasant to take their salt tablets.

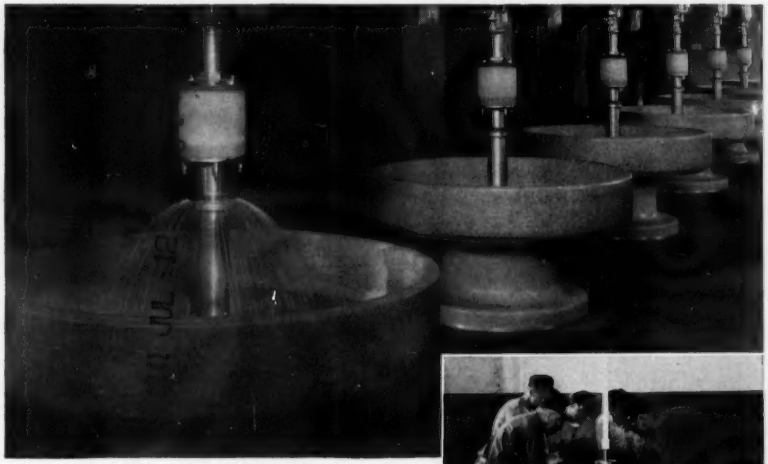
TULIP WATER CUP
FREE—WITH
INITIAL CUP ORDER

Consult a Tulip "Water Watchman." He has a common sense plan to fit *your* paper cup needs. Remember . . . industry pays 20 times more for time lost through sicknesses than through accidents! And remember, too . . . you can't catch a cold from a TULIP WATER CUP! Write today for more facts, figures, information. LILY-TULIP CUP CORPORATION, 122 East 42nd Street, New York, N.Y.—3050 East 11th Street, Los Angeles, Calif.

LILY·TULIP

. . . an all-steel, all-enclosed pull-type Lily-Tulip Cup Dispenser . . . designed to keep cups dirt-proof, dust-proof always.

When Adding Washing Facilities



Portion of a Pratt & Whitney washroom, equipped with Bradley Washfountains

Illustrating group-washing at a Bradley —in Wyman-Gordon plant

Save Time and Space with Group Type Fixtures

Installation of group type wash fixtures saves time. One fixture—one Bradley Washfountain—has capacity for serving 8 to 10 persons simultaneously, taking the place of 8 to 10 single-person wash basins. Piping connections are thus reduced 80 to 90 per cent.

The central sprayhead provides clean, sanitary running water to each person,—and records kept for many years show a reduction in water consumption averaging 70 per cent. This saving alone pays for Bradleys in a short time.

If your plant employs 15 or more persons, or if present washroom is inadequate for your present force, Bradley Washfountains will provide the modern facilities in minimum space. Write for free New "Washroom Layout" Booklet, which contains floor plan suggestions. . . . BRADLEY WASHFOUNTAIN CO., 2259 W. Michigan St., Milwaukee, Wisconsin.

BRADLEY WASHFOUNTAINS

Write for this Washroom Plan Book

OCCUPATIONAL Hazards

JULY 1941

VOLUME 3 NUMBER 10

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Jack Weiss, Editor

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BY SUBSCRIPTION, one year, $1.00. Single copies, Ten cents.

How to
Reduce Acc ent
luen

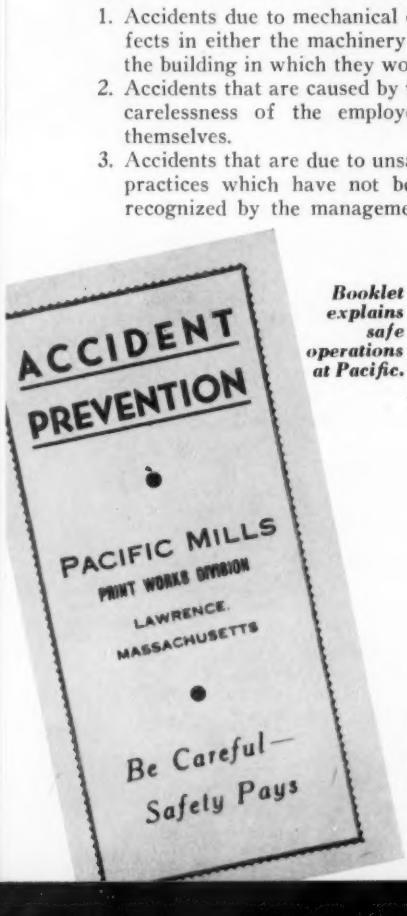
**Pacific Mills sells safety orkers wi
disising methods; match cov fety cal
lets help to achieve a rec unbrol**

S. C. Hickok, Safety Director, Pacific Mills, Print Works Division, Lawrence, Massachusetts has long been a leader in the safety movement. He has spared no ideas in selling safety to the people in his plant.

THE Pacific Mills hires many people to devote all their time and imagination to developing new ideas for the merchandising of their products. In the same way we are trying to merchandise safety by constantly putting before our workers new ideas and angles concerning it. We are sure that eventually our program will make them more careful and safety conscious at their work and away from it.

Broadly speaking, in an industrial plant there are four types of accidents which occur to workers—

1. Accidents due to mechanical defects in either the machinery or the building in which they work.
2. Accidents that are caused by the carelessness of the employees themselves.
3. Accidents that are due to unsafe practices which have not been recognized by the management.
4. The comparatively small list of accidents that may truly fall into the category of hard luck.



Booklet explains safe operations at Pacific.

It is clearly up to the management to prevent accidents of the first and third group by everlastingly watching for defects in equipment and buildings, as well as unsafe practices that may be carried on by the workers, and by keeping all these to a minimum.

Teaching Carefulness

Prevention of the second group of accidents calls for the teaching

Accidents *and* Influence Workers

**fety [w]orkers with modern merchan-
n cove[fety calendars, safety book-
a rec[of unbroken safety progress.**

of workers to be safety conscious, which requires imagination and originality in the way that safety ideas are put across. The more the workers themselves contribute safety ideas the more interest they have in the lessening of accidents and the more safety conscious they become.

As to the fourth group of accidents, there is not much to be done; but by tightening up on the first and third groups, and with increased co-operation in the second group, it will be found that the fourth group will become a very minor part of lost time accidents.

At the Pacific Mills Print Works Division in Lawrence, a concerted effort to reduce lost time accidents has been made since early in 1937. Previous to this time, we had a Safety Committee, consisting of the plant nurse, an overseer, a worker, and a Mechanical Department representative. This Committee went through the plant once a month (the overseer and worker were changed each month) commenting upon such hazards as they noticed, and these were corrected before the next meeting. This Committee still operates and is a very helpful safety group. In addition to this, we put up posters periodically as received from the Insurance Company.

Each employee receives match books that have vital safety messages imprinted on them.

New Field Opened Up

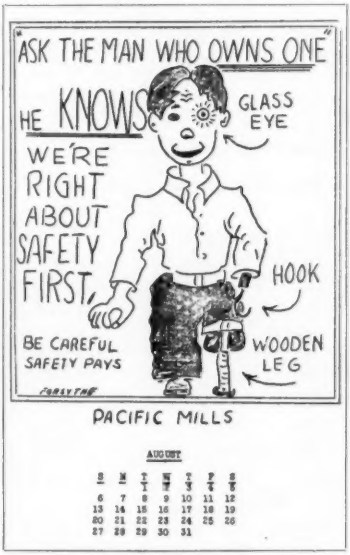
Early in 1937, it became evident that we could open up a great field in the education of our employees to take care of themselves. Our first attempt was a safety poster contest similar to one sponsored by the duPont Company. While the results were not all that we hoped for, they were enough to cause us to search for other safety methods, and, before the end of 1937, we

produced the following items:

1. First, our Safety Poster with a dozen things wrong with the picture—the contestant to send in corrections plus a fifty-word story on safety—the first five winners receiving cash prizes.
2. This led us to discover that we had several excellent artists among our workers, so we encouraged the drawing of original posters with a cash prize for each one accepted. This proved extremely interesting, supplying us with a wide variety of posters, which were changed weekly throughout the year.

A typical match book cover given to employees by Pacific.

3. Safety Booklets. We then compiled a booklet showing all the hazards that are common to each Department. A separate booklet was compiled for electricians, as their work is more hazardous. Each one of our employees has been given a booklet. Each new employee coming into the plant is given one at the time he is registered and is told to be sure that someone in his Department explains these hazards to him before he starts to work. Thus, each new employee, before doing anything, is made to feel safety conscious.



These simple calendars go a long way in telling their story.

4. Safety Calendars. These are made up from drawings by our workers and are put together by them. They have attracted much interest in many other plants besides our own. Every worker has received one to take home, and there are dozens in use around the Print Works as well. In 1938 we varied the safety posters by using rhymes and limericks, and in many instances supplemented these with original drawings. We have recently

brought out a new monthly calendar with the dates at the bottom and a safety picture above. This is so new that we have had no special comments on it. It is just another bit of advertising for safety, and as such, will do its share toward making our workers think and *Be Careful.*

5. We installed three large bulletin boards, one at each gate of the plant and one in the Cafeteria.

6. Up to a short time ago there were five divisions in the Cotton Department of the Pacific Mills —two in Lawrence, Massachusetts, one in Dover, New Hampshire, one in Columbia, South Carolina, and one in Lyman, South Carolina. We have arranged a chart which each Department receives monthly. If there are any accidents, they are listed on a separate sheet so that all Departments know not only how many accidents there were, but just what types of accident they were, and what has been done to prevent recurrence. We feel that this has aroused a competitive spirit to keep accidents down in all Departments.

7. During the current year we have started a new safety Committee with one member from each Department, or about twenty-five in all, and we have asked them to bring to our attention hazards that they may see around the plant and in their own Department. The response has been most gratifying. At the second meeting some sixty to seventy suggestions were made of hazards to be corrected. While some of the items brought up are very insignificant and some entail a prohibitive expense at the present time, the interest and enthusiasm of this group speaks for itself. They are definitely safety minded.

PLANT EMPLOYEES... *like* *La Grace*
POWDERED HAND SOAPS
For quick, thorough, easy-on-the-skin clean-ups.
Write for Free Trial
LIGHTFOOT SCHULTZ CO.
663 FIFTH AVENUE, NEW YORK

8. During the latter part of 1939 and 1940 we developed two new safety items, both novel and different. The first was a cloth cap with a visor, black with white letters, on one side the words, "Safety for all," on the other, "All for Safety." We gave these to our employees and they have been very popular. At the same time, everyone wearing them is advertising safety to his neighbor. The second safety idea was to have safety matches made up, with the slogan, "Matchless—a Safety-minded Worker," on the front cover, with the scratched surface for the matches put on the back. The Pacific Mills trade mark was also put on the back, while on the inside cover was

(Please turn to page 26)

How Liquids and Creams Prevent Occupational Skin Troubles

By **JOSEPH STIFTER,**
The Milburn Co.,
Detroit, Michigan

INCREASED activity in the defense program has posed, more acutely than ever, the problem of industrial skin disorders.

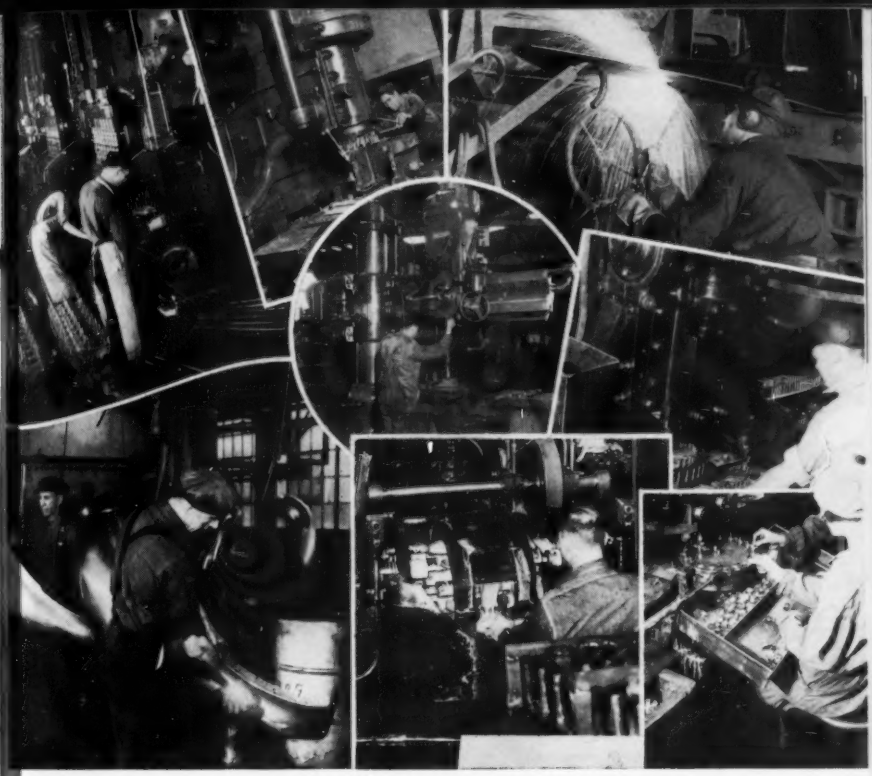
The medical profession, for the most part, has concerned itself with curative rather than preventive measures. Industrial hygienists have evolved three partially successful techniques: 1. The man who shows any hypersensitivity in a given situation is removed from the job. He is placed in a more favourable environment. 2. The chemicals used in a particular operation are examined carefully and non-toxic chemicals are substituted for toxic ones. 3. Mechanical changes are introduced to eliminate or minimize the amount of contact with specific hazards. This includes such devices as ventilation and the like.

Keener Interest

In recent years, the rise of social legislation which makes occupational skin diseases compensable, has stimulated a keener interest in the prevention of occupational dermatoses. Among the several lines of investigation and experimentation has been the development of mechano-chemical preventive liquids and creams. Since this field is restricted to non-therapeutic devices, it is impossible to obtain approval from the medical profession. However, the experimental and actual in-use results have proved beyond all doubt that there is a definite place in industry for the use of mechano-chemical preparations.

The scope of the problem can instantly be recognized in the realization that there are, roughly, 1,600 known chemical irritants, including, acids, salts, alkalis, anhydrides and solvents as general irritants. Specific irritants include: dye intermediates, fur dyes, leather dyes, photo developers, soaps, rubber compounds, insecticides, and fungicides, explosives, cosmetic oils, vegetable and mineral oils, rosin, synthetic resins and waxes. Obviously, there can be no single preparation to prevent irritation and consequently disability from any or all of these hazards.

Further to break down the classifications, let us note a characteristic



Busy industrial hands need careful attention

group of hazards in industrial processes where compounds possess excessive staining or adhesive qualities. In this group, as an illustration, we discover asphalt, tar, printing ink, non-aqueous dyes, greases, waxes, pitch, silicate of soda, thinners, carbon black, enamel, shellac, oxides of lead, bronzing tin, carbon paper, paints, lacquers and varnishes, to mention but a few.

An entirely different group of hazards should be noted in a breakdown of the materials, many of which are in no way related to the elements of the first group mentioned above. A partial list from this second group includes: cooling lubricants, cutting compounds, kerosene, gasoline, naphtha, carbon tetrachloride, toluol, alcohols, carbon bisulphide, tri chlor ethylene, tetra chlor ethane, amyl acetate, butyl acetate, vegetable and mineral oils, cosmetics, rosins, synthetic resins, waxes.

Organic Solvents

The skin hazards that prevail in

New way to solve

ATHLETE'S FOOT

problem

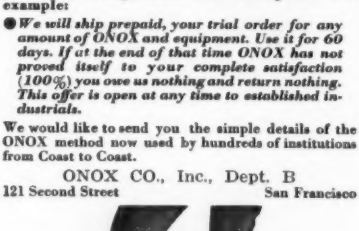
If you have shower rooms, your problem is ever present. Your employees are exposed to infection every day. Our problem is to convince you that ONOX is not "just another one of those Athlete's Foot remedies."

Recent research has upset former theories regarding the control of Athlete's Foot. ONOX is revolutionary. A safe non-poisonous skin toughener does the work. You may test it under any conditions you choose to impose and without obligation. For example:

- ***We will ship prepaid, your trial order for any amount of ONOX and equipment. Use it for 60 days. If at the end of that time ONOX has not proved itself to your complete satisfaction (100%) you owe us nothing and return nothing. This offer is open at any time to established industrials.***

We would like to send you the simple details of the ONOX method now used by hundreds of institutions from Coast to Coast.

ONOX CO., Inc., Dept. B
121 Second Street San Francisco



the manufacture of organic solvents are caused in a number of different ways. For example, they may cause dermatitis by dissolving and removing the fat and sebaceous content of the skin. This results in dryness and cracking, more dangerous exposure to infection. Organic solvents may also dissolve the superficial keratin layer of skin and cause erythema and vesiculation. Allergy or hypersensitivity is still another source of dermatitis, small amounts may cause severe, generalized reactions.

Some of the principal solvents obtained from petroleum are: petane (C_5H_{12}) used in low-temperature thermometers, artificial ice and local anesthesia. Petroleum ether is another derivative which contains pentane, hexane and higher hydrocarbons.

Since they are fat solvents, they can produce a dry-fissured eczema over a long period of time. They also produce acute dermatitis, with erythema, papules, vesicles and desquamation among hypersensitive individuals.

Frequent Causes

Of all the varied substances that produce an eczematoid condition among industrial workers, soap, oil and related materials are the most common. Unfortunately, the skin disorders which they cause are among the most difficult to treat. The incidence of soap dermatitis is not limited to factories which produce soap compounds; it is found in processes necessary in the manufacture of a vast and diversified list of objects. In addition, soap and cleansing agents are used for the hands in many industries, with equally disastrous effects. Recently, improvements in the quality of soaps is to be noted.

The chief offender in cases of soap dermatosis is the presence of free alkali, even though the soap is allegedly superfatted. As a chemical element, soap is stable only at a pH around 11. At this point, alkaline solutions attack the skin, resulting in absorption of water and hydrolysis of the proteins. Although most of the irritation of soap is due to this alkalinity, the fatty acids of cocoanut oil, cottonseed oil and other oils may produce a definite reaction.

Mineral oils, in contrast with vegetable oils and fatty acids, may also be taken up by the glands of the skin, but they are not metabolized. Impure paraffin oils contain compounds that are strongly irritating to the cells of the skin, although pure paraffin oils are inert. Oil acne is the predominant result of contact with such lubricants, cutting oils and softeners. The problem in cases like these is to reduce perspiration, decrease sebaceous secretion and remove or neutralize the alkalinity.

Still another type of industrial skin hazard is found in welding and cutting operations. It has been found that ultra violet and infra red rays, due to "flashes," cause burns which will penetrate even through several layers of clothing. The problem here is to block the rays and prevent excessive burning. Obviously, a mechano-chemical approach is the logical one.

We have, up to this point, presented several different types of industrial skin hazards, with observations on what causes the specific dematitis. The survey has by no means been exhaustive; it has rather been representative of the variety and scope of these hazards. Let us now turn, therefore, to a consideration of the preventive factors.

Recognize Hazards

Even before we take this step, however, we must be prepared to recognize the hazard that exists in our particular plant, processing operation, manufacturing system, or whatever the case may be. Careful study and tabulation is necessary to reveal the incidence of a peculiar affiiction to which the men may be exposed. Once the problem is manifest, caution should be taken to scrutinize case histories among the individual sufferers. In many instances a predisposition toward a particular skin disorder may be discovered. In other instances, chronic skin disorders of one kind or another may merely be aggravated by the specific industrial hazard. In this connection, the medical profession bears the brunt of investigation and classification.

Let us now consider the primary

(Please turn to page 25)

Greater Resistance TO PITTING

WHILE tempered glass lenses became so pitted as to be unfit for use after only 16 hours, in an actual flash-welding service test, Tulca Safety Lenses were still in excellent condition after more than 100 hours.

Send goggle frames to be fitted with sample Tulca Safety Lenses for testing in your own plant. No obligation.

The Univis Lens Company
Dayton, Ohio

TULCA
NON-SHATTERING MATERIAL
SAFETY GOGGLE LENSES

You Can Rely On PLY

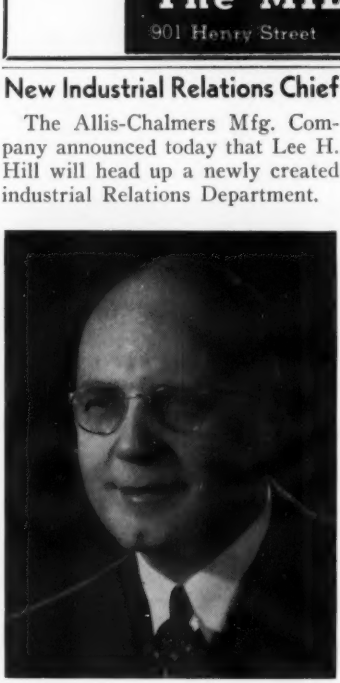
PROTECTIVE LIQUIDS AND CREAMS FOR PREVENTION OF INDUSTRIAL DERMATITIS

Without obligation, write for "The Answer to Industrial Dermatitis"—44-page analysis of causes and prevention of skin diseases in industry. Address Dept. H7.

The MILBURN Co.
901 Henry Street • Detroit, Michigan

New Industrial Relations Chief

The Allis-Chalmers Mfg. Company announced today that Lee H. Hill will head up a newly created industrial Relations Department.



In his new executive post, Mr. Hill will be directly responsible for company rules and regulations, adaptation of jobs and men, job rating, merit rating, foremen's training programs, graduate engineers' training course, apprentice schools, all schools for specialized training such as inspectors and welders, suggestion system, welfare organization, safety and sanitation, company hospitals, working conditions, insurance and pension plans, plant commissaries, club house and recreational programs all of which will be designed to create a closer relationship between the company's executive and shop personnel.

Bausch & Lomb Honors Old Employees

Thirty-five employees and officials of the Bausch & Lomb Optical Company received gold watches recently in recognition of more than fifty years of continuous service with the company.

Led by Edward Bausch and William Bausch, with 67 years and 65 years, respectively, the group attended a dinner at which the watches were awarded by M. H. Eisenhart, president of the company. 437 employees have been with the company for 25 years or more.

Safety Shoes Must FIT . . .

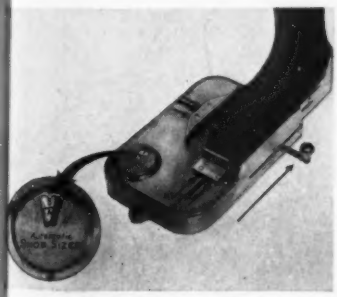
Fitting safety shoes comfortably is an important part of the industrial foot safety program. But it's *only* a part. Even more important are skid-prevention, long wear and low cost, and these demand shoes built to "fit into industry" . . . shoes designed to lick the specific problems presented by different industries, different floor conditions, different feet.

—the industry

Most wet-floor industries have found that rubber safety foot-wear is necessary for adequate toe-protection combined with long wear and sure footing. Mines need leather shoes reinforced against the abrasion of loose rock, coal and shale. Special types of safety shoes therefore have been designed to meet these and many other problems unique to certain types of industry. For maximum safety and longest service life, choose safety shoes built to *fit your industry.*

—the floor

Some floors are wet and slippery. Others are slippery though dry. Oily floors rot leather and rubber. Hot floors cause leather to harden and crack. Obviously, no so-called "general utility" shoe or sole can wear equally well under all these different conditions. Yet when men buy safety shoes inside your plant they have a right to expect longer service than ordinary dress or work shoes will give. The only way you can assure them of this extra safety-shoe service-life is to choose safety shoes with soles engineered to *fit the job.*



—the man

No matter what the danger to their toes, workmen cannot be induced to wear safety shoes that do not fit and feel at least as comfortable as ordinary work or dress shoes. But this does not mean that industry must maintain a staff of specially trained shoe fitters. With the aid of newly developed, accurate fitting devices such as the one shown here, it is possible for any stock-room attendant or other untrained employee to fit safety shoes with complete comfort. To sell foot safety to a maximum number of your employees, choose safety shoes that offer such a means to comfortable *foot-fitting.*

—and fit the service to your plant

Most larger industries find it most practical to maintain their own completely equipped safety shoe departments. But many hundreds of smaller plants carry no stocks of safety shoes on hand . . . order them as needed . . . get them quickly and without extra charge, from the manufacturer's in-stock department. For lowest-cost foot safety, buy safety shoes from the maker who can *fit his service to your needs.*

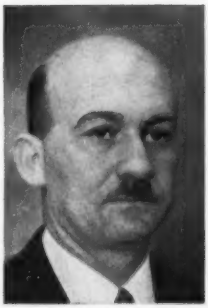
The Lehigh Safety Shoe Co., of Allentown, Pa., offers America's broadest selection of safety shoes built to "fit into industry" . . . 43 different constructions—a shoe for every industrial problem . . . and service to fit your plant. Write today for a complete catalog. Or send for the Lehigh Safety Representative for authoritative advice on your problems. There is no obligation.

Controlling Health Hazards

IN EXPLOSIVES OPERATING AND AMMUNITION-LOADING PLANTS

Major Rogers takes you through a plant, describes the operation, points out the hazards, suggests methods for prevention.

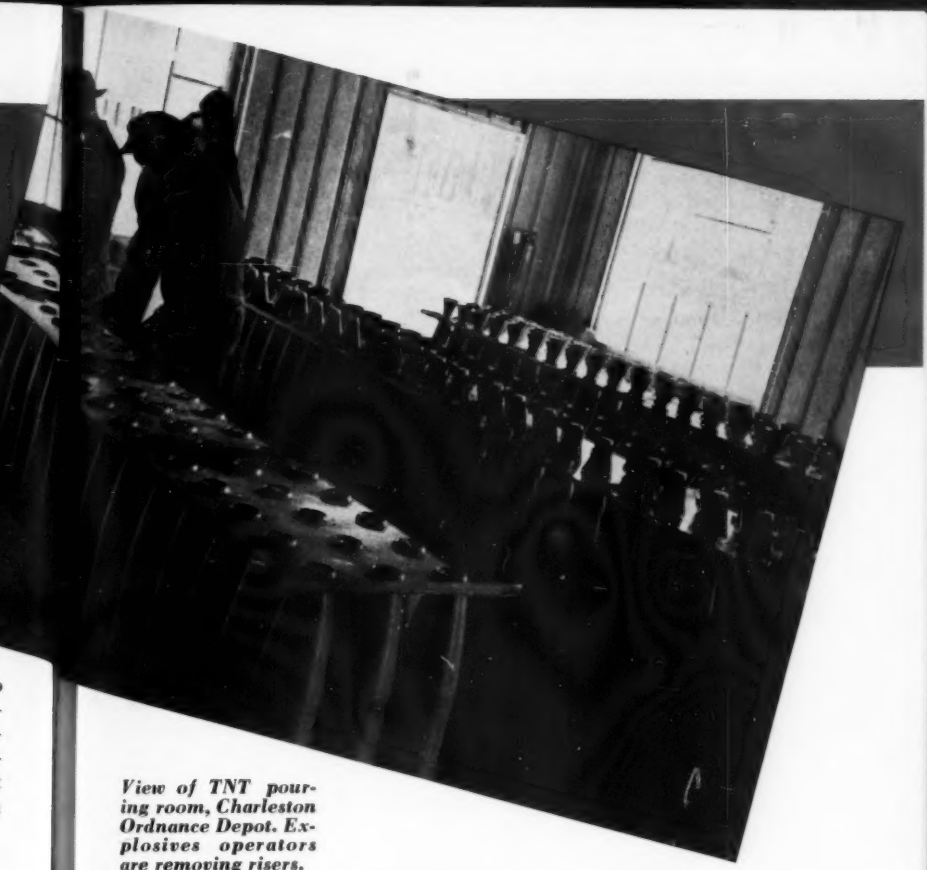
EXPLOSIONS such as the one which wiped out the Gillespie Plant at Morgan, New Jersey, during the last war, and more recently the disaster at the Hercules Powder Company's Kenvil, New Jersey plant have helped to create the impression that making military explosives is a dangerous business. There is no doubt that explosives manufacturing is dangerous but so are many other kinds of manufacturing. The difference is that explosives accidents are highly spectacular and the impression we get from them is far out of proportion to their actual significance.



By Major George D. Rogers, Safety Officer, Office of the Chief of Ordnance, War Department, Washington, D.C. ***The Government has a prime interest in keeping ordnances fully manned, and Major Rogers tells how this is done.***

Although the tragedy of such accidents cannot be overemphasized, a failure by the public to assign them their proper values in relation to the vast efforts being directed toward the production of essential munitions would be similar to a refusal to ride transport planes because crashes sometimes result in tragedy for passengers and crews.

Military explosives and ammunition, when completed and ready for use by troops, are stable and safe in the hands of personnel trained in their use. Even in the processes



View of TNT pouring room, Charleston Ordnance Depot. Explosives operators are removing risers.

of manufacture, explosives used for military purposes are dependable and predictable in their action. Explosions, which are simply rapid releases of energy through the rapid expansion of gases, happen because of definite physical conditions, and these conditions usually can be controlled.

Plant Layout

The Ordnance Department, in operating its existing explosives manufacturing and shell-loading plants, and in planning for new ones, has endeavored to face squarely the fact that there is always a danger that explosions may occur. Consequently, plant layouts represent carefully studied efforts to minimize danger to both persons and property to the greatest extent consistent with reasonable production. The guiding principles which were followed in laying out the plants are:

First: Hazardous operations have been separated from each other by barricades or by placing them in separate buildings.

Second: Operating buildings have been separated from each other by safety distances to prevent the spread of fires or explosions.

Third: The operating buildings have been grouped into separate production lines whose sizes and capacities are based on efficient and economical operation. Examples are fuze-loading lines, complete rounds loading lines, and anhydrous ammonia manufacturing lines. The lines are separated from each other by distances which not only will give protection against the spread of fires and explosions, but also will prevent explosions in one line from structurally damaging buildings in other lines.

Fourth: Equipment layouts in operating buildings have been made with a view toward eliminating hazards from electrical installations, mechanical or static sparks, and fires from lightning or other causes.

Fifth: Change houses and bomb proof shelters have been provided where necessary for the comfort and safety of operating personnel.

Hazards

Once the plants are constructed, processes must remain fairly closely fitted to the original layouts of the various operating lines within the plant, and safety must be obtained by proper management and careful supervision of operations within the lines. The hazards involved in both explosives manufacturing and ammunition loading plants fall naturally into three classes: those associated with fires, those associated with explosions, and those associated with the toxic or other harmful properties of the materials being processed.

Fires

Fires are a constant threat in all explosives processes. Military explosives of the types used as propellants and shell fillers burn violently, and under certain conditions may explode as the result of burning. For example, smokeless powder of some types may explode violently when burned under pressure in closed containers. Also, TNT may detonate as a result of burning, although in many cases it has burned in comparatively large quantities without detonating. Other types of explosives may burn until they reach critical temperatures and then detonate. Since explosives carry their own means of oxidation, explosives fires can be extinguished only by deluges of large quantities of water, or by other means which lower their temperatures below their ignition points.

Although large quantities of explosives may burn without detonation, as evidenced by the case of 51 million pounds of smokeless powder at the Old Hickory Powder Plant shortly after the last war, burning explosives are dangerous and must be treated with caution. After a fire is under way, fire fighting efforts, if employed at all, should be confined to saving adjoining buildings. Only professional fire fighters, familiar with the characteristics of the burning material, should be allowed in the vicinity of explosives fires, and they must of course follow established rules as to cover

and safe distances. Explosives fires which are not extinguished immediately after their inception through the action of drowning tanks, automatic sprinklers, or deluge systems ordinarily should be allowed to burn.

Through the courtesy of the National Fire Protection Association, expert fire protection personnel have been made available to the War Department. These men have acted and are continuing to act as consultants to those operating divisions of the Ordnance Department which approve the final plans for the new plants. All of the existing plants have fire departments organized and equipped along the same lines as those used by municipalities. Similar organizations will be supplied for the new installations now under construction. Besides observing ordinary precautions for the prevention of fires, personnel in plants handling explosives must take additional precautions which are in general similar to those followed in industries in which highly inflammable or explosive vapors or dusts are present.

Explosions

The second class of hazards those associated with explosions are the ones which capture the public imagination. They are considered as manifestations of a mysterious force which occasionally breaks its bonds for no reason at all and goes on a devastating rampage. This is

Infection Costs Plenty

Dermatitis and skin infection can cost you and your employees many dollars a year. Formula SBS-11, the granulated deep-pore skin cleanser removes bacteria, helps prevent this loss. It replaces liquid, bar, paste, and powdered soaps, costs less than 1¢ per worker a week. 5000 plants use it. Write for generous free trial supply. State number of employees. Sugar Beet Products Co., 300 Waller Street, Saginaw, Mich.

Formula SBS-II
THE WASHWORD OF INDUSTRY

If the Heat Gets YOU at the DESK—

THINK OF YOUR WORKERS OUT IN THE PLANT!

***"EYE-KLEAR" SWEAT BANDS**

Worn comfortably over forehead, to prevent perspiration running into eyes, fogging goggles or dripping onto work. Save "brow mopping" time. Made of new, soft, highly absorptive material—needs no pre-wetting, snaps back to shape after squeezing. Inexpensive. Order now. * Trade Mark

SALT TABLETS and DISPENSERS

Prevent heat sickness and fatigue in perspiring workers. Full stocks, prompt shipment, best prices.

ANTI-MIST for GOGGLES

Rub on lenses to prevent fogging due to perspiration. Inexpensive. Order a supply.

Pulmosan Safety Equipment Corp.

Dept. OH, 176 Johnson St., Brooklyn, N.Y.

far from the truth. An unexplained explosion is not unexplainable as such; but it cannot be catalogued or pigeon holed if all the witnesses are killed and all the evidence is destroyed.

Most explosives are safe when handled properly, and military explosives, as incorporated into ammunition, are the safest of the lot since they must be handled not by experts but by soldiers whose attention to duty cannot be diverted by fear of the ammunition which serves them. Their ammunition must be safe to handle and use after they have been given a few simple instructions, and it must remain safe while it continues in service. Consequently, military explosives selected to satisfy a wide variety of requirements must have one characteristic in common—they must be stable compounds. Explosives which have been standardized for use in the military service have been proven both as to stability and reliability in performance, either by their behavior during the many years they have been in use or under surveillance, or by their action when subjected to careful and exhaustive tests.

Toxic Materials

The third type of hazards, namely, the health hazards associated with toxic or other harmful materials, applies to some military explosives. These hazards include the toxic effects of solvents or other materials used in explosives manufacture and ammunition loading. They also include explosives fumes and explosives dust. The problem of controlling this type of hazards

is a familiar one in industries which handle solvents and nitro aromatic compounds.

In illustrating the three types of hazards as they apply to explosives and loading plants, discussion of a few common types of explosives may be of interest.

Mercury fulminate is used as an initiating explosive because of its extreme sensitivity to friction and shock, and its brisance or shattering effect when exploded. When in bulk, it is stored under water and can be safely processed only when wet. Dry mercury fulminate is very sensitive to friction. The principal safety precaution consists of using it in very small quantities under carefully controlled conditions of temperature and chemical concentrations. Mercury fulminate is used in loading plants in conjunction with certain other materials to form charges for primers and detonators which are used for the purpose of igniting propellant explosives or detonating other high explosives. Mercury fulminate as handled in a loading plant has no toxic properties.

Tetryl is used as a booster to insure high order detonations of bomb and shell fillers such as TNT, amatol and ammonium picrate. It is more sensitive than TNT and the other shell fillers, but less so than mercury fulminate or the other initiators. It is the strongest of all known military explosives; but has been found too sensitive to withstand the shock of firing except when compressed into pellets.

The principal hazards encountered in its manufacture are its sensitivity to shock, the toxic effects of the fumes from the sulphanators, nitrators, and recrystallizers, and the toxic effects of the crystalline tetryl. The latter effects are similar to those encountered in TNT and will be discussed later. The principal hazard connected with loading tetryl into boosters is its toxicity. The hazards of the pelletting operation are reduced by the following procedure:

First: A high degree of purity is obtained to insure stability and uniformity.

Second: Crystal size is controlled

(Please turn to page 27)

DUPOR No. 1
Miniature Respirator is the handiest, lightest NUISANCE DUST Protector I ever wore. Weighs less than an ounce. Has new, plastic valves, too! Sells for only $12.00 per dozen. YOU CAN GET A SAMPLE Postpaid by sending in $1.00
H. S. Cover Complete Catalog on request!
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HOFFMAN

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The most economical way to get *all* the dirt. Vacuum cleaning collects 66% more dirt in same time.

2 *Reduce* PLANT MAINTENANCE

Prevents discoloration and corrosion of painted surfaces and steel work. Brightens walls — postpones repainting.

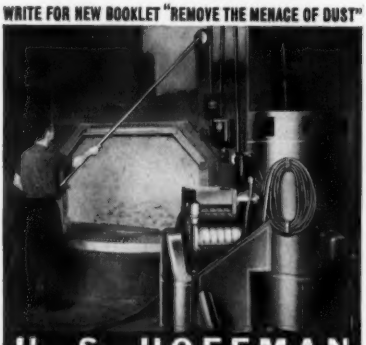
3 *Prevent* DAMAGE TO PRODUCT

Dust particles filtering down from overhead frequently cause costly damage to products in process of manufacture.

4 *Protect* WORKERS' HEALTH

Protect health of workers. Breathing dust-laden air is a serious health hazard. Hoffman equipment provides safe working conditions.

WRITE FOR NEW BOOKLET "REMOVE THE MENACE OF DUST"



U. S. HOFFMAN
MACHINERY CORPORATION
Air Appliance Division
100 East 42nd St., New York, N. Y.

Safety Reminder . . .

Illustrated is a device employed by The Austin Company, designers

and builders of industrial plants. Such constant reminders help keep the careless workman on his toes.

Letter to the Editor

Shall syphilis and gonorrhea sabotage defense industries?

Our experience with industrial problems over the past twenty years has convinced us that instruction of workers is the most important single item in any program for combating syphilis and gonorrhea. With this in view, we have recently published a leaflet entitled, "Vital to National Defense." We are prepared to make this leaflet available, without charge, to industries which will undertake to distribute copies to workers. (WRITE TO THIS PUBLICATION)

We are anxious to bring this program to the attention of both employers and employees. More than that, we are anxious to bring the facts about syphilis and gonorrhea to the men in the industry which your publication serves.

Yours,
THE AMERICAN SOCIAL HYGIENE ASSOCIATION, INC.

Right off the Docket

The trend of litigation on workmen's health and accident compensation is reflected in these briefs of the latest and most representative cases coming to trial in the intervals between issues. Familiarity with this trend is important to every industrialist.

Death from Poison Mistakenly taken to Relieve Pain from Injury held not Compensable

In order to relieve pain caused by the amputation of his foot resulting from a compensable injury, the employee took a bichloride of mercury tablet believing it to be a sedative. His death ensued. The New York Court of Appeals by a four to three decision refused an award. The Court held that in the absence of any evidence that the pain ensued by the amputation was sufficient to derange the employee's mind, or affect his eyesight, there was no connecting link between the death and the injury sustained in the course of employment.

The decision by New York State's highest court reversed decisions by the State Industrial Board and the lower Court. They had held the death to be compensable.

Brown vs N.Y. State Training School for Girls (N.Y.) 32 N.E. 2nd 783 (March-1941)

Occupational Disease Statute Held to Apply to Disease Contracted Prior to Effective Date of Act.

The employee in this case became affected with a disease of the bronchial tubes known as bronchiectasis, due to fumes and dust inhaled in the course of his employment. The Workmen's Occupational Disease Act of Indiana was passed in 1937. The employee was engaged in the employment in which he incurred his disease prior to that time. The contention was made that no award should be granted because the disease was contracted before the Act became effective.

The Court rejected this contention. It stated that the Act provides for compensation for disabilities resulting from occupational diseases, and not for contracting such diseases. Although the employee may have contracted the disease before the Act was passed, he did not become disabled from the disease until a year after the effective date of the Act, and consequently he came within its provisions.

Hirst vs Chevrolet Muncie Div. of Gen. Motors Corporation (Indiana) 33 N.E. 2nd 773 (May-1941)

Compensation Granted for Mercurial Poisoning

The claimant was engaged as a hatter for some time prior to October, 1931. His work required him to handle and come in contact with furs. These furs were treated with mercury. The claimant exhibited symptoms which included a toxic mercurial dermatitis, nervous manifestations which recurrently flared up acutely; marked tremors and general nervous and mental symptoms.

The Court found that the claimant was suffering from, and totally disabled by, mercurial poisoning, a compensable occupational disease under

NIGHT SHIFT WATCH YOUR STEP!

YOU can't overlook the human element. Danger of accidents is imminent enough under normal working conditions, but it becomes increasingly so during the dark hours of night. Pan-Cord Cord-On-End soles and heels provide a non-slip waterproof surface that give sure-footedness throughout their long life. Unlike any other Cord-On-Ending structure, a series of *looped* cords are exposed on end and embedded in automobile tire rubber stock. Cords cannot become loose due to wearing or scuffing.

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LOOPED CORD-ON-END *Safety Soles*

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the New Jersey Compensation Act. The disease was found to have been contracted while in the course, and by reason of the claimant's employment, and an award for his disability was allowed.

Horowitz vs Rothenberg Hat Co. (N.J.) 18 att. 2nd 852 (March-1941)

Bursitis Compensable as Occupational Disease

The claimant's work consisted in pouring medicine into bottles and pasting labels on the bottles. She was employed for nine years prior to June, 1939. Previous to 1938 she did her work by pouring the medicine from a graduate which she held in her right hand. In 1938 a machine for filling and labeling the bottles was installed. The claimant placed the bottle in the machine with her right hand and took them off with her left. In 1935 her right shoulder began to hurt. In 1937 it grew worse, and in June 1939 she was found to be suffering from bursitis.

Bursitis is a specified occupational disease under the Michigan Compensation Act when it is caused by a process involving continuous rubbing, pressure or vibration of the parts affected. The Court held that the facts in this case justified an award. Three judges dissented on the ground that bursitis is not an occupational disease in the occupation of filling and labeling bottles; that the process required under the act did not include the process used by the claimant in this case.

Kalee vs Dewey Products Co. (Mich) 206 N.W. 826 (March-1941)

Digested and compiled by:

HILTON E. ROBERTS

Member of Ohio and New York Bar

Liquids and Ointments for the Skin . . .

(Continued from page 13)

focal point of infection, the skin. The skin is in reality a complex structure, easily stimulated or irritated in varying degrees by means of extraordinary or abnormal exposures. Since skin diseases comprise approximately 70 per cent of all occupational diseases, the importance of proper care cannot be minimized.

In previous years—and in some present instances—salves have been used in an attempt to protect the skin. For the most part, salves merely relax, soothe and partially protect the surfaces to which they are applied. In general, salves consist of fats or fatlike bodies. When rubbed into the skin, they enter the sebaceous glands and are gradually oxidized. In some instances there is a definite bio-chemical reaction which, over a long period of time, is definitely significant.

More recently the trend has been toward the use of neutral, mechanical protection. That is, the application of a substance which forms an impervious extra layer of protection that is capable of withstanding the specific type of irritant against which it has been created. Several such preparations are now available and have a proved background of successful use.

The chief features of what we term mechano-chemical protective coverings are the ease with which they are used, the high degree of protection they offer, and the neutrality which they maintain in the face of constant assaults by all types of hazards. The protective covering, in the form of a cream, paste or quick-drying liquid, must contain no irritating material of any kind. Repeated use of the substance, containing even a minute irritant, would in time result in a skin disorder of its own. A case in point is the use of a plastic, soft substance, polymerized to sufficient degree to retain its plasticity, yet not to such an extent that it loses its applicability for salve formation.

Prevention

It goes without saying that there is no specific protective cream, paste or liquid that is equally efficacious in all types of hazards. The problem has resolved itself into a somewhat tailor-made preparation for each class of hazards. Often, within a special field, individual formulae with wide variations must be created, tested and proved in use.

It cannot be over-emphasized that most protective coverings for the prevention of industrial dermatoses are in no way "cures" for existing conditions. Except as they lessen further aggravation of a given condition, their function is purely non-medical protection. It should also be remembered that the use of protective coverings for the skin is only part of the preventive program. Personal hygiene and plant cleanliness, as well as other conventional safety devices, are of paramount importance.

However, the increased use of protective creams in the past few years—and the current emphasis on their use in modern production literature—indicates that these preparations are definitely needed.

Pacific Mills . . . Merchandises Safety

(Continued from page 9)

the statement, "Safest Print Works in the World, Lawrence, Massachusetts — 2,000,000 man hours without an Accident, 1939." These, given freely to our employees, have proved another source of safety advertisement.

Education Takes Effect

It was not long after our first posters came out in 1937 before we noticed a change, and in 1939, just two years after we began, we set a record which no other Print Works has ever equaled, going over 2,000,000 man hours without a lost time accident. The time elapsed was 10 months almost to a day, and our lost time accident frequency for that year was .20. We give below the figures which speak more eloquently of the value of our efforts toward reducing accidents than any words we could write.

In 1940 we revamped and changed over our entire plant without losing any production, but with many added hazards and confusion. In spite of this, however, our record was not too bad, and our accident frequency still under 1%.

As helpful as the methods described have been, there is one thing more which we feel is the most important of all, and that is the instance of various cases which we call "border line accidents." These are accidents which may be painful but not serious. In our plants, as soon as the man has been cared for by the First Aid Room, someone in charge arranges to take him home. He is made to feel that we do not want him to lose any time if we can help it, not particularly to save a lost time accident, but because we are really interested in the welfare of our workers. If necessary, we arrange to bring such cases back and forth from work and, if they are not able to do their regular job, to find work for them that they can do. Thus they lose no time, and, more important to them, no pay.

This attention has saved more lost time accidents than any other one thing, and we believe it has done more than that, it has created a better feeling among our workers. If we are interested enough to try to keep them working, we find that more and more they are taking a personal interest in our efforts for safety.

After all, safety is one ground on which there should be unanimous co-operation between employees and employers. The safe worker is the careful worker, and when he feels that the management is anxious enough for his welfare to create safe working conditions, he becomes safety conscious.

Going to get rid of Dermatitis in 1941?
Lan-O-Kleen* Hand Soap in your washrooms will be a big help!
Reg. U. S. Pat. Off.
WEST
DISINFECTING CO.

Health Controls at Defense Projects

(Continued from page 21)

and small amounts of graphite are added to provide a free flowing material which will feed through the presses without danger of detonation from friction.

Third: Graphite is procured under rigid specifications which preclude the probability of dangerous foreign matter being present.

TNT Control

TNT is used in greater quantities than any other military explosive. It is used, either in the pure state or as one of the ingredients of amatol, in the bursting charges of practically all shell and bombs except armor piercing shell, which are loaded with ammonium picrate. More persons are likely to be affected by its hazards than by the hazards of almost all other military explosives combined. In addition to the fire and explosion hazards associated with its manufacture, the fumes from nitrators and crystallizers, and the fumes and dust from TNT itself are very toxic. Among the methods used to control these hazards are the following:

First: Proven processes are used, and the speed of reactions is controlled.

Second: Toxic fumes are controlled by ventilation and specially designed processing equipment.

Third: All phases of the process including the packing and shipping operations are controlled by the application of good housekeeping principles.

Fourth: All TNT workers are frequently examined for signs of toxic effects of TNT exposure.

Other Controls

In loading lines the fire and explosion hazards are controlled by:

First: Strict observance of all rules regarding mechanical or static sparks, lightning control and other fire hazards.

Second: The prescribing of maximum quantities of explosives and maximum numbers of persons allowed in each dangerous location.

Third: The constant surveillance of all operating equipment with a

What is SAFETY in MARKING TOOLS?

Spalling and mushrooming are the chief causes of accidents occurring in the use of marking tools.

Cunningham Stamps and Holders are made from a special alloy steel which resists spalling and mushrooming and are, therefore identified as "Safety" Stamps.

A comparison of a Safety Stamp and an ordinary stamp is illustrated. These stamps were used on the identical job and received same number of blows.

MAKE YOUR CHOICE.

Some of our Safety Steel Marking Tools are:

Letters & Figures: Inserted Type Holders; Symbol Stamps; Inspector Hammers; and Roller Dies.

Write today for circular.

M. E. CUNNINGHAM CO.
91 E. Carson Street Pittsburgh, Pa.

view of preventing dangerous operating conditions from developing. For example, dull drills may cause dangerous heating during the booster cavity drilling operation.

Fourth: The insistence upon meticulous housekeeping, in every phase of all operations from one end of the loading line to the other.

The control of toxic hazards in a TNT loading line presents a complicated and somewhat controversial picture as far as diagnosis and treatment are concerned; but the following principles are generally accepted:

First: TNT poisoning may result from breathing air laden with either dust or fumes; from introducing it into the stomach with contaminated saliva, food, or tobacco; or from dust absorbed through the skin.

Second: The symptoms of TNT poisoning may include dermatitis, cyanosis, jaundice, urine discoloration, gastric disturbances, dyspnea, nose bleed, and giddiness.

Third: TNT absorbed into the body acts on the blood and may result in destruction of the red corpuscles.

Fourth: Periodic tests such as urinalysis and the Webster colorometric test can be used successfully to indicate absorption and to serve as warnings to remove affected operators from further exposure. In normal cases, TNT poisoning may be prevented by proper ventilation for fume removal, personal cleanliness, care in handling dry TNT to prevent absorption of the dust, and diets which will counteract the toxic effects. The treatment of TNT poisoning is a matter which should be handled by the physician.

Amatol as now used for filling shell and bombs consists of a mixture of equal parts of TNT and ammonium nitrate. It is mixed at the loading plant by adding molten TNT to hot granular nitrate to form a liquid which is poured into the shell or bombs. It presents even greater hazards than pure TNT, as the nitrate, which may come in contact with the skin, is very hygroscopic and acts as a vehicle to hold TNT in contact with the skin, tending to increase the rate at which it may be absorbed.

Ether, benzol, ammonia, carbon tetrachloride and other toxic substances used in explosives and ammunition-loading plants present hazards with which industry is familiar. Their harmful effects in general can be prevented by proper fume disposal, ventilation and care in handling.

Characteristics

The characteristics which make each type of explosives hazardous during manufacturing processes have been investigated thoroughly and are known generally to all key personnel who will be engaged in manufacturing and loading operations during the emergency. The Ordnance Department has engaged in the manufacture of explosives and the loading of ammunition in varying degrees for a great many years, and has worked out, since the last war, most of the standard operating practices which will be employed in both government and contractor-operated ammunition loading plants.

Healthful Conditions Required

Procedures in explosives-manufacturing plants will follow prac-

tices developed and standardized either by commercial explosives companies or by the Ordnance Department. The control of safety in all plants has been delegated to plant management. Under the requirements of Army regulations and Ordnance Safety Regulations, arsenal commanders are responsible for the safety of all personnel and material under their control; and under the terms of their contracts, explosives-manufacturing and ammunition-loading contractors are responsible for providing safe and healthful working conditions for their employees.

Arsenal commanders are required to have safety organizations which assist them in obtaining compliance with requirements; and contractors are required by the contracting officers or their representatives at the plants to furnish such safety personnel and medical services as will insure compliance with the health and safety terms of the contracts.

Safety Controls

Centralized general control of the safety of personnel and material in plants under the supervision of the Ordnance Department is vested in the Chief of Ordnance who is assisted in matters of safety policy by a Safety Board consisting of the chiefs of the interested operating divisions, and in matters of safety administration by the Ordnance Safety Officer. Technical advisors are provided from among the explosives and ammunition experts who are on duty in the Ordnance Department. In addition, the contractors who are to operate the plants, and particularly the ones who have engaged in commercial or military explosives manufacture, have on their staffs explosives experts who can be relied upon for assistance in carrying out the Ordnance safety program.

An industrial health team consisting of trained field personnel of the Public Health Service and representatives of the Army Medical Corps and the Ordnance Department is now surveying the Picatinny Arsenal. It is expected that surveys of the Ordnances will be completed by the end of July.

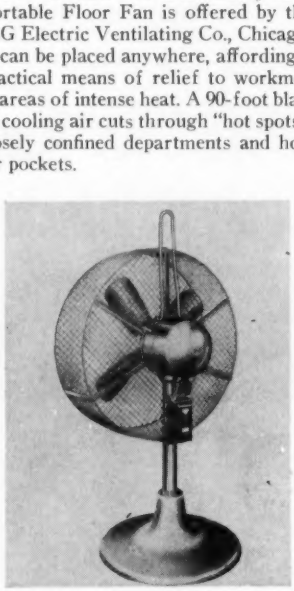
Guard Your Hands Against Infection

DU PONT "PRO-TEK" is a greaseless cream which prevents grime and paint adhering to your hands, and helps to protect the skin from physical contact with materials which may cause irritation. E. I. du Pont de Nemours & Co. (Inc.), Dept. 6-O, Wilmington, Delaware.

DU PONT
PRO-TEK
REG. U. S. PAT. OFF.
THE INVISIBLE GLOVE

New Ideas IN THE

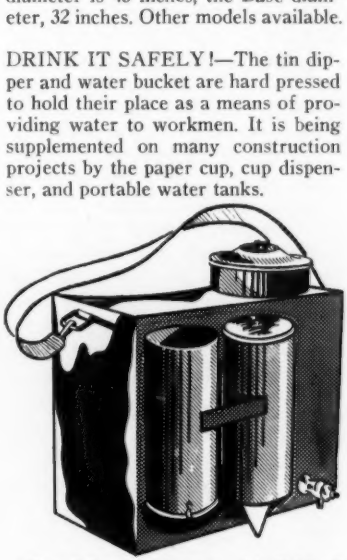
HEAVY-DUTY "MAN-COOLING" FAN—A new 36-inch heavy-duty Portable Floor Fan is offered by the ILG Electric Ventilating Co., Chicago. It can be placed anywhere, affording a practical means of relief to workmen in areas of intense heat. A 90-foot blast of cooling air cuts through "hot spots," closely confined departments and hot-air pockets.



Equipped with a cast-iron base of extra-heavy construction, the ILG special Portable Floor Fan has a low center of balance. It can be moved on a scoop truck, and a hook is also provided so that it can be moved by a crane if desired. A starting switch completes the equipment on the fan.

The 36-inch heavy duty model weighs 675 pounds, attains 1140 R.P.M., and circulates air at a rate of 24,000 cu. ft. per minute. The Overall height is 67 inches. The Guard diameter is 43 inches, the Base diameter, 32 inches. Other models available.

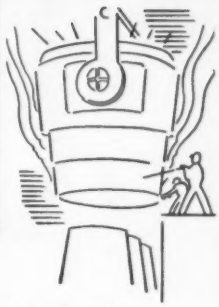
DRINK IT SAFELY!—The tin dipper and water bucket are hard pressed to hold their place as a means of providing water to workmen. It is being supplemented on many construction projects by the paper cup, cup dispenser, and portable water tanks.



One claim for the use of individual paper cups is that they help prevent spread of colds and contagions—something that has real meaning to contractors who have lost time due to sickness of their workmen.

An entire watering unit has been developed by the Dixie-Vortex Company, Easton, Pa. This unit includes dispenser and a water tank for use with that company's line of paper cups.

TREATMENT FOR FIRST-AID AND MANY SKIN INFECTIONS —Domeboro Tabs is a new product which helps cut down industrial losses by speeding recovery from accidental



injury and many skin infections.

Domeboro Tabs can be quickly and easily prepared for use. They consist of a set of two tablets which are mixed with water to make a fresh solution to be used as a wet dressing.

When applied three to five times daily, for thirty minute periods, this preparation was found to speed the healing of many conditions encountered daily among industrial workers. Burns, contact dermatitis, carbuncles, impetigo, eczemas, and ivy poisoning were among the ailments treated. Bruises and swelling, sprains, and many types of skin wounds and inflammation have also been found to respond to Domeboro Tabs.

These tablets contain no lead, solutions are stable and can be made up fresh as needed.

Dome Chemicals Inc., 250 E. 43rd St., New York, N.Y., will send samples and literature to any interested parties.

BURN RELIEF—The new M. S. A. Foille Spray Kit for burns has just been announced by Mine Safety Appliances Company, Pittsburgh, Pa. The kit combines the advantages of the spray technique in the quick application of Foille for Burns, with ready-to-use dressings and every needed accessory for a complete emergency burn kit, states the manufacturer.

The new Kit combines supply of Foille—the new therapeutic preparation for the treatment of burns; a high-pressure spray gun which screws onto the jars of Foille; dressings; a sterilized bleached muslin sheet; ammonia inhalants; tubes of Foille for small burns and tubes of castor oil, for the eye.

VENTILATING FAN—A new fan designed primarily for heating, ventilating, and air-conditioning has been developed by B. F. Sturtevant Company. Known as the Silentvane Design 8,

this fan possesses two characteristics, quietness of operation and low outlet velocity. Housings are made of steel plate with strong rolled bead joints reinforced with heavy bracing angles. Blades are die-formed, riveted to back plate, and welded to the shrouds. In accordance with N.A.F.M. standards for Class I fans, Design 8 Silentvanes are designed for a maximum tip speed of 9000 f.p.m.

Other features claimed for these fans include: (1) Reduced power consumption (2) Lower maintenance cost (3) Slow Rotative and peripheral speeds—consequently longer life.

Useful FREE LITERATURE

The literature briefly described in this department gives important information on products and equipment designed to control occupational hazards. Manufacturers' technical executives tell of the features to be found in their goods. Be sure to get all available data through this literature before buying. Note those items desired on coupon below and mail.

431—PROPER VENTILATION—ILG ELECTRIC VENTILATING COMPANY—Catalog No. 141 contains information of their complete line, including diagrams and installation views of propeller fans. The catalog stresses air change, not just air movement.

432—MINING SAFETY—B. F. GOODRICH COMPANY—Their catalog section on trolley wire guard and blasting cap protection is now available.

433—SAFETY EQUIPMENT CATALOG—SAFETY CLOTHING AND EQUIPMENT COMPANY—42 page catalog details complete line of safety clothing and devices designed to prevent accidents.

434—PLASTIC GOGGLES—GOGGLE PARTS COMPANY—Bulletin describes uses for plastic goggles and outlines features to be found in this type of protective equipment.

435—FANS—EMERSON ELECTRIC MFG. CO.—24 page, pocket-size catalog lists the various models, construction features, performance and prices for their line of fans.

436—LADDER SHOES—JOHNSON LADDER SHOE COMPANY—Circular suggests many uses for safety ladder shoes. Points out their construction, simplicity and desirability. Prices are given.

437—DUST CONTROL—AMERICAN FOUNDRY EQUIPMENT—A recently published 12 page booklet discusses performance, why costly dust conditions should be controlled, how dust problems can be controlled.

438—METAL INDUSTRY DUST CONTROL—KIRK & BLUM MFG. CO.— A well-conceived booklet points out the many uses for Kirk & Blum dust control equipment. List of users and number of installations are given.

439—INDUCTION MOTORS — GENERAL ELECTRIC COMPANY—Publication GEA-3580 gives many interesting highlights on design, construction and application of General Electric's line of Tri-Clad motors.

440—FLOORING FINISHES—FRANKLIN RESEARCH COMPANY—Pamphlet describes line of floor waxes, polishes, finishes, for safe floor maintenance.

441—WATER COOLERS — FRIGIDAIRE CORP.—In a 16 page catalog complete information is given about the efficiency, operating features and service plan for their water coolers.

442—VACUUM CLEANING SYSTEMS—U.S. HOFFMAN MACHINERY CORP.—Bulletin describes the many new uses for vacuum cleaning equipment in industry. Well conceived and informative.

FREE LITERATURE COUPON Clip out and paste on postcard or enclose in envelope. Mail to: OCCUPATIONAL HAZARDS, 812 Huron Road, Cleveland, Ohio.

Nos. of desired items .....

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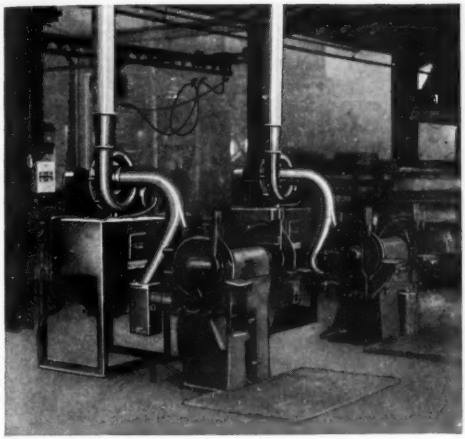
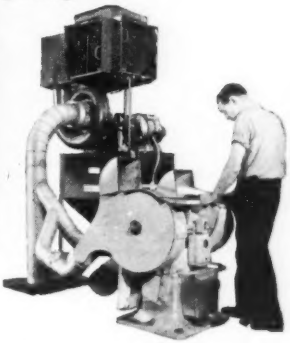
FL-33

The ROTO-CLONE Solves EVERY GRINDING DUST PROBLEM



Pictured at left—two wheel grinding stands exhausted by Type D Roto-Clones with exhaust piped through roof to outside.

Roto-Clone is equally effective for all types of metal grinding service from rough snagging for casting cleaning to the finest finished grinding.



Roto-Clone's efficiency in the collection of all types of grinding dust has been proved by thousands of installations. Roto-Clones are available in a wide variety of sizes including Self-Contained units (illustrated at right) designed to exhaust single or small groups of grinding or polishing operations.

Complete information on the design and installation of a Roto-Clone dust control system to meet your requirements will be submitted to you without obligation. Write for Bulletin No. 272 which gives complete engineering data.

Where outside exhaust is impractical, Type D Roto-Clones equipped with air filter after-cleaners solve dust problems created by metal grinding. Cleaned air passes from Roto-Clone through unit air filters and returns to work rooms.

AMERICAN AIR FILTER CO., INC.
Incorporated
136 Central Ave., Louisville, Ky.
In Canada: Darling Bros., Ltd., Montreal, P.Q.

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The H-H Inhalator is officially accepted by the Council on Physical Therapy of the American Medical Association, and approved by the American Gas Association and the Association of Police and Fire Surgeons. It is compact, portable, and extremely simple and practical in use.

Let us send you the story of the H-H Inhalator,—its operation and applications,—and if you wish, we'll gladly arrange a demonstration at your convenience. No obligation!

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